

Great Falls Hospital Merger - 1996 Economists' Report

Appendix I

Re: Proposed Great Falls Hospital Consolidation
Columbus Hospital
and
Montana Deaconess Medical Center

by
National Economic Research Associates, Inc.

March 5, 1996

ECONOMISTS' REPORT SUBMITTED TO THE
MONTANA DEPARTMENT OF JUSTICE

I. Introduction

At the request of counsel for the Montana Department of Justice (the "Department"), National Economic Research Associates, Inc. (NERA) has reviewed the public record relating to the application of two Great Falls hospitals to receive a Certificate of Public Advantage (COPA) from the State of Montana. This record generally includes the materials, dated October 2, 1995, that were submitted by the applicants (Columbus Hospital and Montana Deaconess Medical Center), various supplemental materials requested of the parties by NERA and the Department, numerous written public comments submitted to the Department, and oral testimony presented during public hearings held on January 24, 1996, in Great Falls. NERA was asked by the Department to report on two broad issues. First, NERA was asked to evaluate the projected cost savings claimed by applicants and, in particular, to examine the following specific issues: (1) whether the cost savings that the applicants claimed would result from the consolidation are, in fact, realistic; (2) whether those cost savings are achievable only through consolidation; (3) whether the merger-specific cost savings exceed any managed care cost savings that may be lost as a result of the consolidation; and (4) whether the projected cost savings will negatively impact operating room capacity.

The second request made of NERA was to assist and advise the Department in developing appropriate regulatory Terms and Conditions to ensure that, in the event the consolidation is approved by the Department, the merger-specific cost savings are passed on to consumers. This economists' report summarizes NERA's work on these two issues. Broadly summarized, it is our opinion that:

a) Re: Cost Savings

b) The significant cost savings claimed by applicants are realistic and, in almost all cases, achievable within three years of consolidation. At today's dollar values, the total cost savings over the next 10 years are worth more than \$46 million to the residents of Great Falls, even after the costs of the transaction and the costs of consolidating the facilities are subtracted. If the effect of the expected annual increase of \$6 million from Medicare is included (due to the consolidated hospital's designation as a "sole community provider"), the value of the merger over the next 10 years rises to \$86 million.

c) The majority of the claimed operating cost savings, some 73 percent, are merger-specific -- that is, achievable only as a result of consolidation.

d) These merger-specific cost savings are also substantially larger, more immediate and more certain than any managed care cost savings that may be lost as a result of the consolidation.

e) The applicants have not established that, absent the consolidation, the financial condition of both hospitals will decline significantly, causing prices to rise and services to diminish.

f) However, assuming the consolidation poses no significant threat to the quality of care available in the market or to the access of that care, the substantial merger-specific cost savings could, in our view, justify the issuance of a COPA (assuming adequate terms and conditions are imposed to ensure that these savings are substantially passed on to consumers).

g) Re: Terms and Conditions

h) The recommended terms and conditions relating to cost savings and hospital prices involve setting a cap on the revenues that the consolidated hospital can collect from patient services. If the consolidated entity collects more than the patient revenue cap, the excess should be refunded through lower prices or through other means that the Department determines to be beneficial to the citizens of Montana.

i) Generally, the patient revenue cap is to be calculated by first subtracting the achievable cost savings claimed by applicants from the total costs of the two hospitals during 1995, the year prior to the consolidation. This represents what total costs should be if the consolidated hospital implements all the promised cost saving strategies.

j) Given this level of efficient cost, the patient revenue cap is then set by allowing the consolidated hospital to earn a six percent net margin -- the margin considered to be a maximum level by the Sisters of Providence in their mission statement. New revenues expected from the federal Medicare program as a result of the consolidated hospital's "sole provider status" will be included when enforcing the cap on patient revenues.

k) After each fiscal year, the patient revenue cap will be compared to the hospital's actual revenues after adjusting for factors such as changes in volume, changes in casemix and medical cost inflation. If actual revenues exceed the cap, price reductions or other measures benefiting the citizens of Montana may be ordered. If actual revenues fall short of the cap, the hospital may be allowed to raise prices during the next year.

l) As an initial measure of the effects of this regulatory methodology, these terms and conditions relating to costs and prices may dictate that average price reductions ranging from approximately 18 to 23 percent be ordered by the Department during the first four years. (Precise figures to be determined; estimates are based on casemix and volume that occurred during 1995. These will undoubtedly change over time.) These price reductions are possible because of the substantial cost savings that will be phased in over the first four years and because of the new Medicare revenues expected once the consolidation occurs. Further, non-Medicare patients will likely enjoy even greater than average percentage price reductions.

These general findings are explained in further detail below. Section II evaluates the cost savings claims made by applicants and indicates which savings are likely to be achieved and which savings are merger-specific. Section III describes the general Terms and Conditions relating to costs and pricing that NERA recommends to the Department. These terms and conditions should ensure that the cost savings claimed by applicants are passed on to the citizens of Montana while still assuring a very satisfactory margin for the hospital, a margin sufficient to replace the equipment and buildings needed to provide high quality hospital services over time to the Great Falls community. Finally, Section IV provides a step-by-step description of the regulatory methodology. This description explains in detail how the regulation will be implemented.

I. Findings Related to Merger-Specific Cost Savings Claimed by Applicants

NERA and its hospital consultant, John Petersdorf, Chief Financial Officer of Dominican Santa Cruz Hospital in Santa Cruz, California, reviewed applicants' claims of cost savings that they expect will result from the proposed consolidation. Both the application and subsequent supplemental materials requested by NERA and Mr. Petersdorf were analyzed to determine whether the claimed savings are reasonable and achievable and whether these savings are specific to the consolidation, not just efficiencies that could be achieved absent the consolidation. Detailed analysis of the claimed savings is presented in Exhibit 1, which reviews each line item of cost savings claimed by the applicants and summarizes which savings are achievable and which can be achieved only by consolidation. A summary of NERA's findings follows:

- a) Applicants claim that they can save some \$10.1 million in on-going operating costs once the consolidation has been fully implemented. NERA estimates that about \$8.5 million of these claimed operational savings are achievable (about 83 percent). Of these achievable annual savings, some \$7.5 million (or 89 percent) are merger-specific; that is achievable only as a result of consolidating the managements and the operations of the two facilities. Approximately \$1 million more in savings can be achieved but these savings could probably be achieved without the merger. Still, the vast majority of the claimed, operational savings are both achievable and merger-specific (i.e., 73 percent).
- b) The estimate of merger-specific operational cost savings is approximately \$2.6 million less than claimed by hospital management. The primary areas of disagreement are as follows:
- c) Some of the documented savings recommended by management could be achieved absent the acquisition (e.g., various opportunities to share support staff across nursing units and the renegotiation of service and professional contracts). Furthermore, the application indicates that some of the savings involve adjusting staffing hours and staff mix (e.g., physical therapy and the intensive care unit). These savings could probably be achieved absent the consolidation. In total, we estimate that nearly \$1 million of the cost savings claimed as merger-specific could be achieved without consolidating.
- d) Experience with other consolidations indicates that there are limited savings in nursing departments assuming that the facilities' nursing units were previously operating at minimum efficient scale. Nursing units at most hospitals should operate with almost entirely variable staffing. Therefore, the combining of departments would generally not yield significant savings. There are a few exceptions in this transaction, notably, the pediatric nursing staff.
- e) Some of the professional fee reductions have corresponding revenue reductions. These should not be viewed as efficiencies.
- f) Some of management's cost savings estimates are actually too low. For example, greater savings should be anticipated in the patient accounting/admitting areas as well as in one time inventory savings.
- g) Thus, substantial operating efficiencies can be generated by the proposed consolidation between Columbus and Montana Deaconess. These savings are consistent with the experience at other facilities which have experienced a similar consolidation of acute care operations. It is not unreasonable to expect that, for two facilities with a combined expense level of over \$100 million dollars, at least 8-10 percent of the combined operating budget can be eliminated.
- h) Management is also estimating capital savings of approximately \$6.2 million for the first two years. We agree that most of these savings are achievable (\$5.9 million). However, some of these capital cost savings are one-time savings (e.g., the impending renovation costs of only one ICU rather than two ICUs), whereas others represent savings that can be reasonably expected to be attained on an on-going basis (e.g., the replacement of smaller pieces of equipment). Thus, we find that the one-time capital savings of \$2.5 million are realistic with the remaining \$3.2 million in capital savings during the first two years being achievable on an on-going basis at the rate of \$1.6 million per year. This magnitude of on-going capital savings is quite reasonable given the hospitals' combined historical capital budgets of about \$12 million per year.
- i) To achieve this annual level of operational and capital cost savings, acute care operations must be consolidated. A merger that keeps the core clinical operations separate and merely consolidates support and management would generate significantly lower operating cost savings, approximately \$4.5 million instead of \$8.5 million. The regulatory oversight costs and risks would be about the same, but the savings would be significantly less without real consolidation.
- j) The full savings outlined above can only be generated through the consolidation of the two hospitals. This is not to say that there is no opportunity for both hospitals to reduce their cost structures absent a consolidation. However, the level of cost savings would be considerably less than outlined here. Based on two primary measures of efficiency -- full time equivalents (FTEs) per case mix adjusted admission and operating expense per case mix adjusted discharge adjusted for wage levels -- the cost structures for

these two hospitals appear to be considerably higher than regional averages. (While the efficiency in terms of FTEs per adjusted occupied bed is near regional norms, this is explained by the much higher length-of-stay in Great Falls, which may soon be reduced by managed care pressures.)

k) Given the experience of many other markets, the entrance of managed care plans in the Great Falls market would almost certainly yield lower costs to consumers as compared to the current situation. There would be two primary impacts. First, managed care plans encourage a lowering of the length-of-stay -- which would directly reduce the net revenue per casemix adjusted admission and would also place pressure on the profit margins of the institutions. Second, because of the possibility of competitive negotiation absent the merger, the managed care plans would be able to negotiate discounts from current hospital pricing levels. Falling revenues would then force the hospitals to lower costs. The magnitude of these cost savings is difficult to determine because it depends on the timing and extent of managed care penetration. Assuming an average managed care penetration of 40 percent of the commercial population with a resulting 20 percent discount from current prices as well as a 10 percent reduction in the average length-of-stay, cost savings of \$3-5 million a year at some point in the future are possible. However, these savings are less certain and less immediate than the merger-specific cost savings that we have estimated. They are also less than half of the anticipated annual operating cost savings (\$8.5 million) and capital cost savings (\$1.6 million) resulting from the consolidation.

l) The expectation of significant cost savings is also consistent with most of the economics literature on the minimum efficient scale of hospitals. For example, one recent study indicates that the California hospitals that have generally grown during the 1980s have been relatively large (about 400 licensed beds). This study also indicates that the efficiency gains for a relatively full service hospital may not be fully exhausted until the hospital reaches a size as large as 370 licensed beds. These findings suggests two things. First, the region surrounding Great Falls probably cannot support two relatively full service hospitals into the future. Second, we should expect to find real cost savings from this type of consolidation, and we do.

m) In summary, presuming that a mechanism is put in place to pass along the efficiency savings to consumers, costs would be significantly lower with the consolidation of these two hospitals than the level that would be generated by relying on future managed care penetration alone. However, it must be noted that the likelihood or immediacy of achieving the non-merger-specific efficiencies that would be created by managed care is somewhat threatened by the merger, since managed care penetration may be slowed in the face of reduced competition for hospital services in Great Falls. On net, it is our opinion that the overall cost savings from the consolidation are much more important. Moreover, the cost savings that we have determined to be non-merger specific (nearly \$1 million) are the type of cost savings that we would expect to occur as managed care penetration increases and can easily be imposed on the consolidated hospital as part of the Terms and Conditions for the issuance of the COPA. Similarly, managed care will still be able to put pressure on length-of-stay through appropriate incentives to physicians.

n) Applicants predict that the consolidated hospital will generate approximately \$6 million a year in increased Medicare revenues because of its new designation as a "sole community provider." As long as a mechanism is provided such that this additional reimbursement translates into lower prices for consumers and third-party payors, and does not simply fall to the bottom line of the institutions, this new revenue source provides an additional justification for issuing the COPA.

o) Operating room utilization for the non-cardiac and non-cystoscopy rooms was reviewed at Columbus Hospital and Montana Deaconess for the months of November and December of 1995. On only five days were 10 or more rooms in use at the same time. With prudent modification of the schedule, on four of these days, the volume could have been accommodated with 10 operating rooms while still allowing surgeries that were scheduled in the morning to remain in the morning. On only one day -- November 16 -- would cases have needed to be shifted to a different time of day (from morning to afternoon) to work within the proposed operating room limits. The operating room schedule can also be modified by encouraging earlier start times. It is common practice at most hospitals to begin operating at 7:30 AM rather than 8:00 AM. Our review of the current pattern of operating room usage reveals that many of the rooms are not in use promptly at 8:00 AM. Thus, capacity is going unused that would otherwise be utilized if a more efficient schedule were implemented.

p) Our analysis of operating room capacity, however, does not account for one important element of the proposed reconfiguration of operating rooms; namely, that one campus will be designated as an inpatient facility. Surgeons will likely express a preference to have some outpatient cases follow inpatient volume. With only five operating rooms at the inpatient facility, there may not be adequate capacity at that campus if some outpatient procedures are also performed. Given the concerns of the medical staff as well as the limited costs to build an additional operating room, it maybe prudent to require that the consolidated hospital maintain at least six operating rooms at the inpatient site. These added costs, approximately \$300,000 based on applicants' calculations, do not materially affect the expectation of significant cost savings from the merger. Moreover, by adding one operating room, so that the consolidated hospital has a total of six inpatient operating rooms, there will be sufficient capacity to handle projected volumes while maintaining an average daily operating schedule consistent with industry norms for similarly situated hospitals.

I. General Description Of Regulatory Methodology

The Department asked NERA to assist it in developing an appropriate regulatory methodology to ensure that the cost savings and other financial benefits of the consolidation are passed on to the citizens of Great Falls and other parts of Montana. By general category, these expected annual financial benefits (expressed in 1995 dollars) include the following:

- a) Merger-Specific Annual Operating Cost Savings: \$7.5 million
- b) Other (non-Merger-Specific) Annual Operating Cost Savings: nearly \$1 million
- c) Annual Capital Cost Savings: \$1.6 million
- d) Annual Additional Medicare Revenues: \$6 million

These annual financial benefits of approximately \$16.1 million per year are, in part, offset by a variety of one-time, up-front expenses necessary to accomplish the consolidation. These include the various transaction costs needed to explore and implement the consolidation, approximately \$5.35 million, and the renovation costs necessary to consolidate the operations of the two facilities, approximately \$7.3 million, including one additional operating room. Many of the transaction costs, mainly for consulting services and legal services, have already been expended. Approximately \$3.35 million more in transaction costs are expected during 1996 and beyond. (See Exhibit 2.) There will also be approximately \$3 million in one-time cost savings for ICU renovations that can be avoided and various one-time inventory savings. Thus, the expected average annual financial benefits of \$16.1 million will be offset by approximately \$7.65 million in additional one-time expenses, net of one-time savings. Detailed estimates of the anticipated net financial benefits from the consolidation, by year for 1996 through 2005, are presented in Exhibit 3. The present discounted value of these financial benefits over the first 10 years, a calculation which indicates today's value of this stream of savings and new Medicare revenues, is \$86 million. The Department could ensure that these significant financial benefits are passed on to the citizens of Montana by regulating the level of patient revenue that the consolidated entity can take in during each year following the consolidation. This revenue cap could be calculated and applied at the end of each fiscal year to determine whether the hospital should be allowed to raise its prices, hold prices constant or be forced to reduce prices. The patient revenue cap could be estimated based on two major factors:

- a) An estimate of what total costs should have been in that year based on pre-merger cost levels minus the net cost savings anticipated for that year. This cost estimate calculates what costs for the hospital would have been in 1995 if the hospital's management had implemented during that year the efficiency measures stated in their application to the Department. This cost estimate will then be adjusted for: (1) changes in volume that may have occurred between 1995 and the year in question (e.g., if fewer than expected patients use the hospital); (2) changes in the casemix of patients that used the hospital (e.g., allowable costs would be higher if relatively more open heart surgeries are performed and relatively fewer normal newborns are delivered in a given year); and (3) for inflation in the purchase of hospital supplies and other inputs. Thus, the first factor determines what the total costs for the year in question should have been if the hospital management implemented the stated efficiency measures adjusted for these factors.
- b) The second factor needed to determine the revenue cap is a net margin target. The net margin is one measure of the profitability of a hospital. If a hospital raises prices, the net margin would usually increase,

assuming few patients turn to alternative providers. Thus, setting a cap on revenues based on allowing the consolidated entity to set prices only sufficient to earn a specific net margin becomes the basis for the post-merger regulation. The Sisters of Providence have indicated in their mission statement that their goal as a not-for-profit entity is not to exceed a 6 percent net margin. This margin is clearly sufficient to maintain the financial health of the hospital and accrue the surplus funds necessary to replace the facility and equipment as it ages. (For perspective, the median net margin for all U.S. hospitals was 3.8 percent in 1994, and the median net margin for urban U.S. hospitals doing between \$100 to \$150 million of business was 5.0 percent in 1994.) The regulatory methodology adopts the Sisters' stated goal of 6 percent as the maximum acceptable net margin.

Once the level of allowable costs is determined -- that is, costs net of the claimed efficiencies -- and a 6 percent margin is added, this determines the acceptable level of total revenue for the hospital. For example, hypothetically, if total costs for both hospitals before the consolidation were \$110 million and if the estimated efficiencies that will result from the merger are \$10 million, then the total costs after the merger should be \$100 million -- assuming that management implements all of the planned cost saving policies. If a net margin of 6 percent is added, then an allowable revenue cap of just over \$106 million would result.

The allowable revenue cap requires a further adjustment. As explained in footnotes 1 and 3, the net revenues earned from investments and other (non-patient) operations should be subtracted off in order to reach an estimate of the allowable revenues that will come from patient-related services. This is necessary because the goal of the regulation is to ensure that the cost savings are passed on to consumers in the form of lower prices for patient services. For instance, if non-patient care revenues were \$500,000 in the example above, the patient revenue cap would fall to \$105.5 million instead of \$106 million.

The patient revenue cap is then compared to the actual level of patient revenues earned by the consolidated hospital during the previous year. If actual patient revenues exceed the cap, the Department has at least three options. First, proportionate rebates could be ordered, but this would likely be very inexact and cumbersome. Second, the Department could order price cuts during the next year to work off the surplus. Third, the Department could order the consolidated hospital to turn over the surplus, or some substantial portion of the surplus, to the state for healthcare related programs benefiting the residents of the Great Falls service area. This last option is particularly appropriate if chronic surpluses begin to build up. The surplus (and any shortfall) should be cumulative. That is, if there is a \$3 million surplus in year 1 and a \$2 million surplus in year 2, then the hospital must reduce prices to work off the cumulative, \$5 million, surplus.

If the actual patient revenues are lower than the cap, the hospital should be allowed to raise prices during the following year to make up for the shortfall. Like surpluses, the shortfalls should be cumulative in effect. However, if market conditions change sufficiently so that the hospital cannot raise prices to a level which yields a 6 percent margin above the allowable costs, then the Department should not step in to order payors to pay prices they are not willing to pay, given market alternatives. That is, this regulatory scheme is not intended to protect the consolidated hospital from suffering losses or even from going out of business.

As mentioned above, the revenue cap approach is designed to ensure that the expected financial benefits from the consolidation are passed on to the residents of Great Falls. It does so by lowering the prices that the residents will have to pay for hospital services relative to what they otherwise would have had to pay. For example, Exhibit 4 shows that, if the consolidated hospital's patient volume and casemix remain constant at 1995 levels, the revenue cap approach will result in anticipated price reductions that range from 17.6 to 22.3 percent during the first four years. Exhibit 5 presents a similar picture. It shows that, even if there is a relatively large decline in the consolidated hospital's patient volume and/or casemix, the anticipated price reductions will still be significant, ranging from 15.4 to 20.2 percent during the first four years. Thus, under both scenarios, significant financial benefits would be passed on.

I. Step-By-Step Description Of The Regulatory Methodology

There are ten steps required to implement the regulatory methodology described in the previous section. These steps are described below, with Exhibits 6 and 7 provided to illustrate how the steps can be used to

calculate the patient revenue cap for the first post-merger year. It should be noted that the calculations in Exhibits 6 and 7 are based on unaudited data and that the most recent audited data from the hospitals will be needed before the exact standards to be included in the regulatory review can be set.

The intent of the regulatory methodology is to ensure that the stated cost savings are passed on to consumers while still providing sufficient funding to the consolidated hospital to assure a continued ability to provide quality care and sufficient reinvestment funds to replace the facility and its equipment in a reasonable manner. This can be accomplished by making sure that the patient revenue cap is calculated based on two fundamental assertions by the applicants. First, that the consolidated hospital will be substantially more efficient than two separate hospitals. Our analysis confirms this assertion, and this regulation will require the hospitals to attain those substantial cost savings that the Department has determined achievable, whether specific to the merger or not.

The second fundamental assertion made by the applicants is that the net margin of a not-for-profit hospital should not exceed six percent. This assertion is found in the "mission statement" of the Sisters of Providence. The patient revenue cap methodology embodies this not-for-profit commitment by allowing the merged entity to generate only those revenues sufficient to provide a profit margin of six percent. Moreover, the additional revenues expected from the federal Medicare program will be included in the enforcement of the revenue cap to assure that the benefits of these new monies will also fall to consumers in the form of keeping prices down.

The basic incentive of a revenue cap is to keep costs down. Since the consolidated hospital cannot increase its profitability by raising prices under a revenue cap, it must work to produce the care more efficiently. As described in Section III, the patient revenue cap is set by allowing the consolidated hospital to charge only enough to earn a six percent margin above the reduced level of costs that the Department has determined is appropriate for the consolidated hospital. If the consolidated entity does not keep costs in line with the target level, the consolidated hospital will realize lower margins than six percent or, possibly, even suffer losses. In contrast, if the consolidated entity produces efficiencies that are even greater than the targeted costs savings, it can earn even higher margins than six percent.

Once the patient revenue cap is calculated, the focus of the annual review will be to determine whether the actual patient revenues for the previous year exceeded the patient revenue cap that has been set by the regulatory scheme. The ten steps to the regulatory review are as follows:

Step 1: Calculate the Baseline Total Costs (in 1995 dollars)

Since the applicants claimed and the Department has determined that the consolidated hospital can reduce expenses relative to pre-merger costs, the total costs from the most recent pre-merger period will be used to judge whether the hospitals are achieving cost savings once the merger is consummated. (For purposes of the following discussion, we will assume that the most recent period is 1995.) The regulatory methodology begins by calculating what costs would have been in 1995 if the cost savings strategies had been implemented. This provides a baseline cost target that the applicants have indicated is achievable post-merger. This calculation is central to the regulatory scheme because it provides the main benchmark against which all hospital performance will be measured.

Using the audited financial statements that most closely correspond to the baseline year (i.e., the fiscal year reports for 1995), the combined total costs for both hospitals will be calculated. Any one-time transaction costs that were expended to study and implement this consolidation during the baseline year will be subtracted from the baseline costs. For example, we estimate these transaction costs to be \$1.259 million for fiscal year 1995. Other significant non-recurring expenses will also be considered in setting the baseline cost measure.

Step 2: Calculate the Allowable Total Costs (in 1995 dollars)

The next step involves calculating the Allowable Total Costs (in 1995 dollars) for the year under the regulatory scheme. These costs represent what total costs should have been for the previous year if the consolidated hospital had successfully implemented the planned costs savings program for that year. The

Allowable Total Costs will be calculated by subtracting the appropriate Expense Reduction Target from the Baseline Total Costs. The Expense Reduction Target represents the achievable cost savings, assuming that patient volume, casemix and input costs remain unchanged. Exhibit 3 indicates the Expense Reduction Targets for each of the first ten years post-merger. All of these targets are expressed in 1995 dollars. These calculations represent NERA's estimate of all of the achievable operating and capital-related costs that will be passed on to consumers by the consolidated hospital in each of the first ten years. (Targets for additional years have been calculated but are not shown.) If necessary, these targets may be refined prior to the issuance of the COPA.

Step 3: Adjust the Allowable Total Costs for inflation

Because hospital input costs rise from year to year, the Allowable Total Costs must be adjusted for the amount of inflation that has occurred between the baseline year, 1995, and the year under review. The inflation index that will be applied is based on the Bureau of Labor Statistics measure called the Producer Price Index (PPI) for all hospital services. The actual inflation index that will be used will be created by taking the PPI for the year under review and dividing it by the PPI for 1995. Once the inflation index has been determined, the Allowable Total Costs in current dollars can be calculated by taking the Allowable Total Costs in 1995 dollars and multiplying it by the inflation index.

Step 4: Create the Ratio of Casemix Adjusted Admissions

This is the first of four steps that will be used to adjust the Allowable Total Costs for changes in patient volume and/or casemix. It involves creating a ratio to estimate how the merged hospital's workload has changed relative to the baseline year. The ratio will be created by dividing the casemix adjusted admissions for the year under review by the casemix adjusted measure for the baseline year, 1995. If the ratio is less than 1, this indicates that the workload has gone down, either because of fewer admissions or because the casemix was less intense (or some combinations of these effects).

The casemix adjusted admissions is a standard indicator used in the hospital industry to measure a hospital's inpatient and outpatient workload. It controls for both the number of patients and the casemix of the patients. The formula for calculating the casemix adjusted admissions is as follows: $[\text{admissions} \times (1 + \text{gross outpatient revenues} / \text{gross inpatient revenue})] \times \text{casemix}$. In applying this formula, there are a number of technical issues that need to be addressed. First, normal newborns should not be included in the number of admissions. Their costs are already in the mothers' costs. Second, the number of admissions should be based only on the categories of admissions that are currently included in the applicants' audited financial reports. Finally, the casemix weights should be based on the weights used in the Health Care Financing Administration (HCFA) casemix index. However, HCFA often changes its casemix weights every year. Therefore, to eliminate possible confusion, the formula should be based on whatever HCFA casemix weights are in effect as of October 1 of the year in question (assuming a fiscal year ending December 31). For example, the formula for the baseline year, 1995, should be based on whatever HCFA casemix weights were in effect as of October 1, 1995. Similarly, the formula for the first post-merger year, should be based on whatever the casemix weights are in effect as of October 1 of that year.

Step 5: Determine the Variable Cost Approximation (in current dollars)

This step involves multiplying the Total Allowable Costs (in current dollars) by one minus the Ratio of Casemix Adjusted Admissions. The resulting figure will provide a first approximation of how much actual costs have changed as a result of the patient volume and/or casemix changing. It is, however, only an approximation because it assumes that hospitals can adjust costs proportionally to changes in workload. Because hospitals cannot generally adjust costs proportionately, this calculation is only an interim step to finding out how much the total costs have truly changed. In Step 6, below, a further correction is made to account for the fact that some costs will remain the same even if admissions and/or casemix change. Thus, this calculation overstates the amount by which the total allowable costs should be adjusted.

Step 6: Determine the Fixed Cost Correction (in current dollars)

The purpose of the Fixed Cost Correction is to account for the fact that not all costs will change as volume and/or casemix changes. For instance, not all costs per admission can be avoided when fewer admissions show up at the hospital. Likewise, not all costs per admission can be reduced when healthier admissions show up at the hospital. The regulatory methodology recognizes that about 30 percent of hospital costs are fixed and 70 percent are variable, at least over a relatively long run period. The Fixed Cost Correction is calculated by multiplying the Variable Cost Approximation by 0.3.

Step 7: Adjust the Allowable Total Costs (in current dollars) for Changes in Volume and/or Casemix

This is the final step required to adjust the Allowable Total Costs (in current dollars) for changes in volume and/or casemix. It yields the Total Cost Target, which represents what costs should be if the merged hospital is producing efficiently--even in the face of changing volume and/or casemix. The step involves subtracting the Fixed Cost Correction from the Variable Cost Approximation and then taking the resulting number (which will be positive) and either adding it or subtracting it from Allowable Total Costs depending on whether casemix adjusted admissions have increased or decreased. If the casemix adjusted admissions in the year under review are greater than in the baseline year, the resulting number should be added to the Allowable Total Costs because the merged hospital now has a larger workload and thus more costs relative to the baseline year. On the other hand, if the casemix adjusted admissions have declined relative to the baseline year, this means that the number should be subtracted from the Total Allowable Costs because the merged hospital's now has a smaller workload and fewer costs.

Step 8: Calculate the Total Revenue Cap (in current dollars)

This calculation is made by dividing the Total Cost Target from Step 7 by .94, which is equal to 1 minus the allowable net margin of six percent. It yields our estimate of the Total Revenue Cap for the year under review. The Total Revenue Cap indicates the maximum revenue the consolidated hospital should have collected during the previous year. This revenue would produce a healthy six percent net margin above the level of costs that the consolidated hospital promised it could achieve, at least to the degree confirmed by NERA.

Step 9: Calculate the Patient Revenue Cap (in current dollars)

The Patient Revenue Cap is the key calculation in the regulatory scheme. It is calculated by subtracting the past year's non-patient related net revenue from the Total Revenue Cap. This step subtracts off any net revenues earned by the hospital from its investment portfolio or other operating activities not related to patient care (e.g., the net revenues from the hospital gift shop or cafeteria). The Patient Revenue Cap, thus, indicates the maximum revenue that the consolidated hospital will be allowed to earn through the prices it charges for patient care services.

Step 10: Compare the Actual Patient Revenues (in current dollars) to the Patient Revenue Cap (in current dollars)

To determine if the hospital pricing policies yielded an appropriate level of revenues, the revenue cap must be compared to the patient revenues brought in during the year under review. If actual revenues are higher than the cap, then patient prices are considered to have been too high. As set forth in the Terms and Conditions, the Department may take the following action:

a) Any excess revenues above the Patient Revenue Cap that are under \$3.5 million dollars will be retained by the hospital and returned to the healthcare consumer through lower patient prices during the next year. If the hospital fails to lower prices sufficiently to eliminate the surplus from the previous year, the surpluses will accumulate under the regulation until the cumulative surpluses after any given year reach a sum of \$3.5 million or more.

b) If the surplus in any one year or the cumulative surpluses from all previous years exceed \$3.5 million, the Department will order that the amounts above \$3.5 million be turned over to the Department as a contribution to health care related programs in the service area. The Department will determine which

consumers or agencies will receive the rebates or refunds in any given year and these funds will never be returned to the hospital, even in years of chronic shortfall.

c) In instances in which actual patient revenues fall short of the cap, the regulation allows the consolidated hospital to raise its prices so that it can earn a six percent margin during the following year. Any shortfalls in revenues will also be cumulative and will be counted against any cumulative surpluses. In the event that the cumulative shortfalls exceed the surpluses, the consolidated hospital may raise its prices until the deficit is eliminated. Under no condition should the Department guarantee either the financial success or the business survival of the merged hospital if market conditions evolve toward greater competition. The intent of the regulation is to protect consumers from monopoly prices in the absence of competitive pressures on the hospital, not to preserve the monopoly position that the consolidation may create.